Claims

1. (Previously presented) A method for manufacturing a semiconductor package, said method comprising:

providing a wafer including one or more semiconductor chips, each chip comprising an active surface and a back surface, and having one or more mirrors formed on the active surface and a plurality of bond pads formed on a periphery of the chip;

forming a photoresist over the one or more mirrors;

singulating the one or more semiconductor chips from the wafer;

attaching the back surface of the one or more semiconductor chip to a top surface of a base substrate;

electrically interconnecting the bond pads of the semiconductor chip to the base substrate; and

removing the photoresist from the semiconductor chips after the electrically interconnecting the bond pads to the base substrate.

2. (Original) The method of claim 1, wherein said singulating comprises full-cutting the wafer.

3. (Previously presented) The method of claim 1, after said forming the photoresist, further comprising:

forming a metallic layer over a back surface of the wafer,

wherein said attaching is performed using a metallic adhesive.

4. (Original) The method of claim 1, further comprising:

hermetically sealing each attached semiconductor chip on the upper surface of the base substrate.

5. (Previously presented) A method for manufacturing digital micro-mirror device (DMD) packages, said method comprising:

providing a wafer including a plurality of DMD semiconductor chips, each chip comprising an active surface and a back surface and having one or more mirrors formed on substantially the center of the active surface of the chip, a plurality of electrode pads formed on the periphery of the active surface;

forming a photoresist over the mirrors;

forming a metallic layer on a back surface of the wafer;

Claims

separating the wafer into the individual semiconductor chips;

attaching the back surface of each semiconductor chip to an upper surface of a base substrate using a metallic adhesive;

interconnecting the electrode pads of the semiconductor chip to the base substrate with one or more bonding wires;

removing the photoresist from the semiconductor chips after interconnecting the electrode pads to the base substrate;

forming an anti-sticking film on the active surface of the semiconductor chip for protecting the semiconductor chips from dust and moisture; and

hermetically sealing the semiconductor chip and the bonding wires on the upper surface of the base substrate.

6. (Original) The method of claim 5, wherein the metallic layer is made of a metal having a low melting point, said metal being selected from the group consisting of Va, Au, Ni, Ag, Cu, Al, Pb, Sn, Sb, Pd and metal-containing compounds thereof.

7. (Original) The method of claim 5, wherein the base substrate is selected from the group consisting of a ceramic board, a plastic board and a printed circuit board.

8. (Original) The method of claim 5, wherein said forming a metallic layer comprises lapping the back surface of the wafer and forming the metallic layer made of a metal having a low melting point on the back surface.

9. (Previously presented) The method of claim 5, wherein said metallic adhesive is solder.

10. (Original) The method of claim 5, wherein said hermetically sealing of the semiconductor chip and the bonding wires comprises providing a metal sealing ring to the base substrate on a periphery of the base substrate and hermetically sealing the semiconductor chip and the bonding wires by attaching a window lid to the upper surface of the metal sealing ring, and wherein a distance between the upper surface of the base substrate and the lower surface of the window lid is greater than the height of the one or more bonding wires.

Claims

11. (Original) The method of claim 10, wherein said window lid comprises a metal lid frame in contact with the metal sealing ring, a window perforating the metal lid frame generally in the center of said window lid, a reflectance coating film formed on the lower surface of the window on a periphery thereof, and a moisture getter attached to lower surface of the metal lid frame.

12. (Original) The method of claim 5, after said hermetically sealing the semiconductor chip and the one or more bonding wires, which further comprises attaching a heat sink stud to the lower surface of the base substrate.

13. (Currently amended) The method of claim ~~1~~ 5, wherein said hermetically sealing the semiconductor chip is performed at a predetermined temperature, said predetermined temperature being not higher than the temperature on which said attaching the semiconductor chip to the base substrate is performed.

14-15. (Cancelled)

16. (Previously presented) A method for manufacturing a semiconductor package, said method comprising:

providing a wafer including one or more semiconductor chips, each chip comprising an active surface and a back surface and having one or more mirrors and electrodes formed on the active surface;

coating the one or more mirrors with a photoresist film;

singulating the one or more semiconductor chips from the wafer;

attaching the back surface of the one or more semiconductor chip to a top surface of a base substrate using a metallic adhesive;

electrically interconnecting the electrodes of the semiconductor chip to the base substrate; and

removing the coated photoresist film from the one or more mirrors of the semiconductor chips after the interconnection.

17. (Previously presented) The method of claim 16, after said coating the photoresist film, further comprising:

forming a metallic layer over a back surface of the wafer.

Claims

18. (Previously presented) The method of claim 16, wherein said metallic adhesive is solder.

19. (Previously presented) The method of claim 16, wherein the electrically interconnecting comprises wire bonding.

20. (New) A method for manufacturing a semiconductor package, said method comprising:

providing a wafer including one or more semiconductor chips, each chip comprising an active surface and a back surface, and having one or more mirrors formed on the active surface and a plurality of bond pads formed on a periphery of the chip;

forming a photoresist over the one or more mirrors;

forming a metallic layer over a back surface of the wafer;

singulating the one or more semiconductor chips from the wafer;

attaching the back surface of the one or more semiconductor chip to a top surface of a base substrate using a metallic adhesive;

electrically interconnecting the bond pads of the semiconductor chip to the base substrate; and

removing the photoresist from the semiconductor chips after the electrically interconnecting the bond pads to the base substrate.

21. (New) A method for manufacturing digital micro-mirror device (DMD) packages, said method comprising:

providing a wafer including a plurality of DMD semiconductor chips, each chip comprising an active surface and a back surface and having one or more mirrors formed on substantially the center of the active surface of the chip, a plurality of electrode pads formed on the periphery of the active surface;

forming a photoresist over the mirrors;

forming a metallic layer on a back surface of the wafer;

separating the wafer into the individual semiconductor chips;

attaching the back surface of each semiconductor chip to an upper surface of a base substrate using a metallic adhesive;

interconnecting the electrode pads of the semiconductor chip to the base substrate with one or more bonding wires;

Claims

removing the photoresist from the semiconductor chips after interconnecting the electrode pads to the base substrat ;

forming an anti-sticking film on the active surface of the semiconductor chip for protecting the semiconductor chips from dust and moisture; and

hermetically sealing the semiconductor chip and the bonding wires on the upper surface of the base substrate at a predetermined temperature not higher than the temperature on which said attaching the semiconductor chip to the base substrate is performed.